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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER BARTON, JEFFREY THOMAS				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/796,310

Applicant(s)

MELTON ET AL.

Examiner

Jeffrey T. Barton

Art Unit

1795

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7, 8 and 10-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 8 and 10-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 18 June 2008 has been entered.

Response to Amendment

2. The amendment filed on 18 June 2008 does not place the application in condition for allowance.

Status of Rejections Pending Since the Office Action of 18 March 2008

3. The rejection of claim 12 under 35 U.S.C. §103(a) as unpatentable over Shingleton in view of Nath et al is withdrawn due to Applicant's amendment.
4. All other previous rejections are maintained.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1, 2, 4, 5, 7, 8, 10, 11, 13-16, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shingleton (US 6,058,930) in view of Nath et al. (26th PVSC reference)

Regarding claim 1, Shingleton teaches a shelter providing solar tracking assembly (Figures 2-10) comprising a fixed support structure comprising a support pillar having an end connected to a ground surface and extending substantially vertically (Piers 56; Column 6, lines 14-20); a horizontal support beam as claimed (Torsion Tube

32 or 52; Figures 9A and 10; Column 7, lines 35-40); at least one drive assembly (Column 6, line 59 - Column 7, line 15); a solar array disposed on the support structure (Figures 9A-9C and 10; Column 7, lines 26-51; each beam 32 supports a plurality of solar panels), the solar panels comprising solar cells (Column 1, lines 12-15), the arrays being moveable on an axis in communication with the drive assembly to track movement of the sun as claimed (Column 6, line 59 - Column 7, line 15; Column 2, lines 30-57); said solar power array forming an overhead canopy (Any elevated, flat, substantially horizontal surface reads on this limitation, such as this array at noon, for example); and wherein the support pillar is of a height permitting placement of an object underneath the canopy as claimed. (Ground clearance is shown in the figures, small objects could clearly be placed beneath the arrays without obstruction) As is clear from the embodiments of Figures 2 and 3, the arrays of Shingleton require torque arms 46 or 66 to be joined to the torsion tubes 32 or 52 at positions that are at the tops of the support pillars and collinear with the axis of the torsion tubes 32 or 52.

Regarding claim 4, clearly, photovoltaic devices require output connectors in order to make any use of the electricity generated by the cells. This is inherent in the system of Shingleton.

Regarding claims 5 and 13-16, Shingleton does not explicitly disclose the vehicles claimed or specifically call the structure a carport, but Shingleton suggests placing the tracking structure atop a parking ramp. (Column 8, lines 43-45)

Regarding claim 7, Shingleton discloses rotor bearing assemblies atop the support pillars. (e.g. Bearings 40 or 90 allowing rotation of the panels; Column 5, lines 57-59)

Regarding claim 8, Figures 9A-9C and 10 show plural arrays of panels, and multiple support structures.

Regarding claim 10, Figures 9A-9C and 10 show longitudinal connection of multiple arrays. (e.g. pairs of arrays disposed on opposing sides of linkage mechanism 68 in Figures 9A-9C, pair of arrays 34 shown in Figure 10)

Regarding claim 11, Shingleton shows pairs of arrays disposed as claimed in Figures 9A-9C and 10, multiple support structures 36 having rotor bearings are shown disposed as claimed in Figure 10. As seen in figure 9, one end of each array is connected to the drive assembly (e.g. actuator 42) via linkage mechanism 68.

Regarding claim 18, ends of the torque arms (e.g. 46) that are attached to torsion tubes are portions of the drive assembly, and are attached to the horizontal support beam and disposed as claimed. (E.g. Figures 2A-2C)

Regarding claims 19 and 20, the arrays of Shingleton are movable on a single axis defined by the longitudinal axis of the support beam. (Column 2, lines 30-57; Figures)

Shingleton does not explicitly disclose providing power to a nearby structure or providing the instant inverter. Specific to claims 5 and 13-16, Shingleton does not explicitly disclose the vehicles claimed or specifically call the structure a carport, but

Shingleton suggests placing the tracking structure atop a parking ramp. (Column 8, lines 43-45)

Nath et al teach photovoltaic roofing elements for covering parking structures, which includes an inverter, and which feed electricity to the utility grid. (Page 1343, 1st column, 1st paragraph) Nath et al's carport provides parking for up to six cars on the ground surface on which the carport is disposed. (Page 1343, 1st column, 1st paragraph, figures 5 and 6)

It would have been obvious to one having ordinary skill in the art to modify the system of Shingleton by specifically providing an inverter and configuring the system to provide power to the local utility grid, as taught by Nath et al, because Nath et al teaches that this is an effective means of utilizing power generated by the photovoltaic structure. Providing an inverter for conversion of DC power from photovoltaic systems to AC for use in conventional residential/commercial systems is conventional, as is the provision of the generated power to a local utility grid, and these features provide the predictable result of providing power in a form suitable for conventional AC powered loads connected to the grid. Within this combination, the power within the grid (including that provided by the photovoltaic system) will obviously be used to provide power to nearby buildings that are connected to the grid.

Regarding the limitation to a "drive assembly" disposed at the top of the support pillars, it is the Examiner's position that the joining of torque arms 46 or 66 to torsion tubes 32 or 52 could obviously be achieved by fasteners or welds provided at ends or the torque arms that are at a top of a support pillar at a position inherently collinear with

the horizontal support beams. As such a junction of arm (46 or 66) with fastener and torsion tube (32 or 52) enables the drive function of Shingleton, such a junction reads on a broadly-recited "drive assembly", particularly in light of the fact that the instant disclosure (Embodiment of Figure 6) describes a "drive mechanism" 48 separate from this assembly that could apparently provide the driving force, much as Shingleton's system uses additional structures to provide driving force via rods 44 and 64.

Regarding claims 5 and 13-16, it would have been obvious to one having ordinary skill in the art to modify the system of Shingleton by providing the photovoltaic structures as a carport covering multiple parked vehicles, as taught by Nath et al, because Nath et al shows such disposition of solar panels, and Shingleton suggests placing the tracking solar structure over a parking ramp. Such use of the system of Shingleton would have provided the predictable benefits of power generation and protection of parked vehicles.

Regarding claim 2, within this combination, other generators that are inherently connected to the utility grid read on the instant "back-up generator", as they provide power when the PV system does not.

9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shingleton and Nath et al as applied to claims 1, 2, 4, 5, 7, 8, 10, 11, 13-16, and 18-20 above, and further in view of Cifaldi. (US 6,372,978)

Shingleton in view of Nath et al is relied upon for the reasons given above.

Neither Shingleton nor Nath et al explicitly discloses a battery to store the power generated by the photovoltaic array.

Cifaldi teaches a battery used to store power generated by solar cells for later use. (Figure 2, battery 76; Column 6, lines 27-33)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the system of Shingleton by providing a battery to store generated power for later use, as taught by Cifaldi, because Cifaldi teaches that such storage means conserve generated electricity not immediately needed. (Column 2, lines 35-51) Such storage means are conventional in the art of photovoltaic generation, in order to provide power when sunlight is not available, such as at nighttime or on cloudy days. The inclusion of such storage means provides the predictable benefit of stored electricity for on-demand consumption, and inclusion of such a battery would therefore have been obvious to a skilled artisan.

10. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shingleton and Nath et al as applied to claims 1, 2, 4, 5, 7, 8, 10, 11, 13-16, and 18-20 above, and further in view of Matlin. (US 5,143,556)

Shingleton in view of Nath et al is relied upon for the reasons given above.

Neither Shingleton nor Nath et al explicitly discloses a concrete support pillar.

Matlin teaches photovoltaic array support pillars made of concrete. (Column 5, lines 35-48)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the system of Shingleton by specifically using concrete support pillars in constructing the system, as taught by Matlin, because Matlin teaches that pre-cast concrete pillars are effective members for support of photovoltaic arrays. Concrete is a universally well-known structural material, and would have been recognized as a suitable material for performing the function of supporting the arrays of Shingleton et al. Note that the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

11. Claims 1, 2, 4, 5, 7, 8, 10, 11, 13-16, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prideaux et al (US 4,429,178) in view of Shingleton and Nath et al.

Regarding claim 1, Prideaux et al teaches a shelter providing solar tracking assembly (Figures 1-4; shelter is inherently provided when panels extend horizontally to any degree) comprising a fixed support structure comprising a support pillar having an end connected to a ground surface and extending substantially vertically (Posts 42); a horizontal support beam as claimed (Torque Tubes 40); at least one drive assembly (44) disposed at the top of a support pillar and positioned collinear with the horizontal support beam; a solar array disposed on the support structure (Solar panels 32), the solar panels comprising solar cells (Column 4, lines 7-49), the arrays being moveable on an axis in communication with the drive assembly to track movement of the sun as

claimed (Column 4, line 26 - Column 5, line 8); said solar power array forming an overhead canopy (Any elevated, flat, substantially horizontal surface reads on this limitation, such as this array at noon, for example); and wherein the support pillar is of a height permitting placement of an object underneath the canopy as claimed. (Ground clearance is shown in the figures, small objects could clearly be placed beneath the arrays without obstruction)

Regarding claim 4, clearly, photovoltaic devices require output connectors in order to make any use of the electricity generated by the cells. This is inherent in the system of Prideaux et al.

Regarding claim 7, Prideaux et al discloses rotor bearing assemblies atop the support pillars not having drive assemblies. (Column 4, lines 50-59; Figure 3 - pillar 42 at right has bearings allowing rotation of the tube and panel as claimed)

Regarding claim 8, Figure 3 shows plural arrays of panels, and plural support structures.

Regarding claim 10, Figure 3 shows longitudinal connection of multiple arrays and support structures.

Regarding claim 11, Prideaux et al shows multiple arrays (i.e. panel 32 comprises plural arrays of cells; Column 4, lines 17-22) disposed as claimed in Figure 3. Multiple linked support structures as claimed are disclosed at Column 5, lines 48-56. Linkage of the horizontal support beam ends to the drive assemblies and rotor bearing assemblies occurs via the panels 32.

Regarding claim 18, drive assembly 44 is attached to the horizontal support beam and disposed as claimed. (Figure 3)

Regarding claims 19 and 20, the arrays of Prideaux et al are movable on a single axis defined by the longitudinal axis of the support beam. (Column 2, lines 30-57; Figures)

Prideaux et al does not explicitly disclose providing power to a nearby structure or providing the instant inverter, nor does Prideaux et al explicitly disclose providing an object disposed beneath the solar arrays. Specific to claims 5 and 13-16, Prideaux does not explicitly disclose the vehicles claimed or specifically call the structure a carport.

Nath et al is cited as teaching what is conventional in the art, namely that photovoltaic generators can be connected to an inverter for conversion of DC to AC power, with the output of the inverter then tied into the utility grid for consumption. (Page 1343, 1st column, 1st paragraph) Nath et al also teach that photovoltaic panels supported on vertical pillars can be used for covering parking structures. Nath et al's carport provides parking for up to six cars on the ground surface on which the carport is disposed. (Page 1343, 1st column, 1st paragraph, figures 5 and 6)

Shingleton et al teach one-axis tracking photovoltaic structures similar to those of Prideaux et al, and suggests placing the tracking structure atop a parking ramp. (Column 8, lines 43-45)

It would have been obvious to one having ordinary skill in the art to modify the system of Prideaux et al by specifically providing an inverter and configuring the system

to provide power to the local utility grid, as taught by Nath et al, because Nath et al teaches that this is an effective means of utilizing power generated by the photovoltaic structure. Providing an inverter for conversion of DC power from photovoltaic systems to AC for use in conventional residential/commercial systems is conventional, as is the provision of the generated power to a local utility grid, and these features provide the predictable result of providing power in a form suitable for conventional AC powered loads connected to the grid. Within this combination, the power within the grid (including that provided by the photovoltaic system) will obviously be used to provide power to nearby buildings that are connected to the grid.

It would also have been obvious to one having ordinary skill in the art to modify the system of Prideaux et al by providing the photovoltaic structures as a carport covering multiple parked vehicles, as taught by Nath et al, because Nath et al shows that solar panels are useful as shading structures for carports. In addition, Shingleton further suggests placing a one-axis tracking solar structure similar to that of Prideaux et al over a parking ramp. Such use of the system of Prideaux would have provided only the predictable benefits of power generation and protection of parked vehicles.

Regarding claim 2, within this combination, other generators that are inherently connected to the utility grid read on the instant "back-up generator", as they provide power when the PV system does not.

12. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prideaux et al, Shingleton, and Nath et al as applied to claims 1, 2, 4, 5, 7, 8, 10, 11, 13-16, and 18-20 above, and further in view of Cifaldi. (US 6,372,978)

Prideaux et al in view of Shingleton and Nath et al is relied upon for the reasons given above.

None among Prideaux et al, Shingleton, and Nath et al explicitly discloses a battery to store the power generated by the photovoltaic array.

Cifaldi teaches a battery used to store power generated by solar cells for later use. (Figure 2, battery 76; Column 6, lines 27-33)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the system of Prideaux et al by providing a battery to store generated power for later use, as taught by Cifaldi, because Cifaldi teaches that such storage means conserve generated electricity not immediately needed. (Column 2, lines 35-51) Such storage means are conventional in the art of photovoltaic generation, in order to provide power when sunlight is not available, such as at nighttime or on cloudy days. The inclusion of such storage means provides the predictable benefit of stored electricity for on-demand consumption, and inclusion of such a battery would therefore have been obvious to a skilled artisan.

13. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prideaux et al, Shingleton, and Nath et al as applied to claims 1, 2, 4, 5, 7, 8, 10, 11, 13-16, and 18-20 above, and further in view of Carlton.

Prideaux et al in view of Shingleton and Nath et al is relied upon for the reasons given above.

None among Prideaux et al, Shingleton, and Nath et al explicitly discloses a drive assembly comprising a coupler within a plate disposed as claimed, with the coupler attached to an end of the horizontal support beam.

Carlton teaches a solar tracking drive assembly (Figure 1) comprising couplers disposed within a plate (Gears within gear box 22; Column 3, lines 39-48), with the couplers attached to a horizontal support beam via pivot mechanism 20.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the system of Prideaux et al by specifically using the drive assembly of Carlton, because Carlton teaches the efficacy of such a system in providing tracking function, and Prideaux et al suggests using the tracking systems made by Acurex Corporation. (Column 1, lines 46-59; Column4, lines 50-56) This selection of a known means for providing tracking drive would have only provided the predictable result of successfully tracking the sun's movement.

14. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prideaux et al, Shingleton and Nath et al as applied to claims 1, 2, 4, 5, 7, 8, 10, 11, 13-16, and 18-20 above, and further in view of Matlin. (US 5,143,556)

Prideaux et al in view of Shingleton and Nath et al is relied upon for the reasons given above.

None among Prideaux et al, Shingleton, and Nath et al explicitly discloses a concrete support pillar.

Matlin teaches photovoltaic array support pillars made of concrete. (Column 5, lines 35-48)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the system of Prideaux et al by specifically using concrete support pillars in constructing the system, as taught by Matlin, because Matlin teaches that pre-cast concrete pillars are effective members for support of photovoltaic arrays. Concrete is a universally well-known structural material, and would have been recognized as a suitable material for performing the function of supporting the arrays of Shingleton et al. Note that the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Response to Arguments

15. Applicant's arguments filed 19 May 2008 have been fully considered but they are not persuasive.

Applicant argues that Shingleton does not teach a drive assembly disposed as claimed. The Examiner respectfully disagrees because the term "drive assembly" is considered broad enough to read on the junction of torque arm with horizontal support beam, which could obviously include welds or fasteners or other conventional attachment means, and which enables the panels to be driven to track the sun's

movement. This is particularly in light of the fact that the instant disclosure (Embodiment of Figure 6) describes a "drive mechanism" 48 separate from the "drive assembly", which could apparently provide the driving force, as Shingleton's system uses additional structures to provide driving force via rods 44 and 64.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Jeffrey T. Barton whose telephone number is (571)272-1307. The examiner can normally be reached on M-F 9:00AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 10/796,310
Art Unit: 1795

Page 17

/Jeffrey T. Barton/
Art Unit 1795
27 August 2008